<110>   CORTI, Olga
        HAMPE, Cornelia
        BRICE, Alexis
        PRADIER, Laurent
        ROONEY, Thomas
        FOURNIER, Alain

<120>   METHOD FOR DETERMINING THE ABILITY OF A COMPOUND TO MODIFY THE
        INTERACTION BETWEEN PARKIN AND THE P38 PROTEIN

<130>   FRAV2002-0020 US NP

<150>   GB 0229934.5
<151>   2002-12-20

<150>   US 60/396,929
<151>   2002-07-18

<160>   22

<170>   PatentIn version 3.2

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cgt gtg gag ctt ccc acc tgc atg tac cgg ctc ccc aac gtg cac ggc   96
Arg Val Glu Leu Pro Thr Cys Met Tyr Arg Leu Pro Asn Val His Gly
                20   25   30

agg agc tac ggc cca gcg ccg ggc gct ggc cac gtg cag gaa gag tct   144
Arg Ser Tyr Gly Pro Ala Pro Gly Ala Gly His Val Gln Glu Glu Ser
            35   40   45

aac ctg tct ctg caa gct ctt gag tcc cgc caa gat gat att tta aaa   192
Asn Leu Ser Leu Gln Ala Leu Glu Ser Arg Gln Asp Asp Ile Leu Lys
        50   55   60

cgt ctg tat gag ttg aaa gct gca gtt gat ggc ctc tcc aag atg att   240
Arg Leu Tyr Glu Leu Lys Ala Ala Val Asp Gly Leu Ser Lys Met Ile
65   70   75   80

caa aca cca gat gca gac ttg gat gta acc aac ata atc caa gcg gat   288
Gln Thr Pro Asp Ala Asp Leu Asp Val Thr Asn Ile Ile Gln Ala Asp
                85   90   95

gag ccc acg act tta acc acc aat gcg ctg gac ttg aat tca gtg ctt   336
Glu Pro Thr Thr Leu Thr Thr Asn Ala Leu Asp Leu Asn Ser Val Leu
            100   105   110

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ggg aag gat tac ggg gcg ctg aaa gac atc gtg atc aac gca aac ccg      384
Gly Lys Asp Tyr Gly Ala Leu Lys Asp Ile Val Ile Asn Ala Asn Pro
        115                 120                 125

gcc tcc cct ccc ctc tcc ctg ctt gtg ctg cac agg ctg ctc tgt gag      432
Ala Ser Pro Pro Leu Ser Leu Leu Val Leu His Arg Leu Leu Cys Glu
    130                 135                 140

cac ttc agg gtc ctg tcc acg gtg cac acg cac tcc tcg gtc aag agc      480
His Phe Arg Val Leu Ser Thr Val His Thr His Ser Ser Val Lys Ser
145                 150                 155                 160

gtg cct gaa aac ctt ctc aag tgc ttt gga gaa cag aat aaa aaa cag      528
Val Pro Glu Asn Leu Leu Lys Cys Phe Gly Glu Gln Asn Lys Lys Gln
                165                 170                 175

ccc cgc caa gac tat cag ctg gga ttc act tta att tgg aag aat gtg      576
Pro Arg Gln Asp Tyr Gln Leu Gly Phe Thr Leu Ile Trp Lys Asn Val
            180                 185                 190

ccg aag acg cag atg aaa ttc agc atc cag acg atg tgc ccc atc gaa      624
Pro Lys Thr Gln Met Lys Phe Ser Ile Gln Thr Met Cys Pro Ile Glu
        195                 200                 205

ggc gaa ggg aac att gca cgt ttc ttg ttc tct ctg ttt ggc cag aag      672
Gly Glu Gly Asn Ile Ala Arg Phe Leu Phe Ser Leu Phe Gly Gln Lys
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cat aat gct gtc aac gca acc ctt ata gat agc tgg gta gat att gcg      720
His Asn Ala Val Asn Ala Thr Leu Ile Asp Ser Trp Val Asp Ile Ala
225                 230                 235                 240

att ttt cag tta aaa gag gga agc agt aaa gaa aaa gcc gct gtt ttc      768
Ile Phe Gln Leu Lys Glu Gly Ser Ser Lys Glu Lys Ala Ala Val Phe
                245                 250                 255

cgc tcc atg aac tct gct ctt ggg aag agc cct tgg ctc gct ggg aat      816
Arg Ser Met Asn Ser Ala Leu Gly Lys Ser Pro Trp Leu Ala Gly Asn
        260                 265                 270

gaa ctc acc gta gca gac gtg gtg ctg tgg tct gta ctc cag cag atc      864
Glu Leu Thr Val Ala Asp Val Val Leu Trp Ser Val Leu Gln Gln Ile
        275                 280                 285

gga ggc tgc agt gtg aca gtg cca gcc aat gtg cag agg tgg atg agg      912
Gly Gly Cys Ser Val Thr Val Pro Ala Asn Val Gln Arg Trp Met Arg
        290                 295                 300

tct tgt gaa aac ctg gct cct ttt aac acg gcc ctc aag ctc ctt aag      960
Ser Cys Glu Asn Leu Ala Pro Phe Asn Thr Ala Leu Lys Leu Leu Lys
305                 310                 315                 320

tga attgccgtaa ctgattttaa agggtttaga ttttaagaat ggtgctcttt         1013

catgcctatt atcagtaagg ggacttgtat tagagtcaga gtcttttat ttaggccagt    1073

tgtcaagtgt caataaaagc atcatgtaat ttaaaaaaaa aaaaaaaaaa aactcgag     1131
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Arg Ser Tyr Gly Pro Ala Pro Gly Ala Gly His Val Gln Glu Glu Ser
        35                  40                  45

Asn Leu Ser Leu Gln Ala Leu Glu Ser Arg Gln Asp Asp Ile Leu Lys
        50                  55                  60

Arg Leu Tyr Glu Leu Lys Ala Ala Val Asp Gly Leu Ser Lys Met Ile
65              70                  75                  80

Gln Thr Pro Asp Ala Asp Leu Asp Val Thr Asn Ile Ile Gln Ala Asp
                85                  90                  95

Glu Pro Thr Thr Leu Thr Thr Asn Ala Leu Asp Leu Asn Ser Val Leu
            100                 105                 110

Gly Lys Asp Tyr Gly Ala Leu Lys Asp Ile Val Ile Asn Ala Asn Pro
        115                 120                 125

Ala Ser Pro Pro Leu Ser Leu Leu Val Leu His Arg Leu Leu Cys Glu
        130                 135                 140

His Phe Arg Val Leu Ser Thr Val His Thr His Ser Ser Val Lys Ser
145                 150                 155                 160

Val Pro Glu Asn Leu Leu Lys Cys Phe Gly Glu Gln Asn Lys Lys Gln
                165                 170                 175

Pro Arg Gln Asp Tyr Gln Leu Gly Phe Thr Leu Ile Trp Lys Asn Val
            180                 185                 190

Pro Lys Thr Gln Met Lys Phe Ser Ile Gln Thr Met Cys Pro Ile Glu
        195                 200                 205

Gly Glu Gly Asn Ile Ala Arg Phe Leu Phe Ser Leu Phe Gly Gln Lys
        210                 215                 220

His Asn Ala Val Asn Ala Thr Leu Ile Asp Ser Trp Val Asp Ile Ala
225                 230                 235                 240
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Ile Phe Gln Leu Lys Glu Gly Ser Ser Lys Glu Lys Ala Ala Val Phe
                245                 250                 255
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Arg Ser Met Asn Ser Ala Leu Gly Lys Ser Pro Trp Leu Ala Gly Asn
            260                 265                 270
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Glu Leu Thr Val Ala Asp Val Val Leu Trp Ser Val Leu Gln Gln Ile
            275                 280                 285
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Gly Gly Cys Ser Val Thr Val Pro Ala Asn Val Gln Arg Trp Met Arg
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Ser Cys Glu Asn Leu Ala Pro Phe Asn Thr Ala Leu Lys Leu Leu Lys
305                 310                 315                 320
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Arg Val Glu Leu Pro Thr Cys Met Tyr Arg Leu Pro Asn Val His Gly
            20                  25                  30
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Arg Ser Tyr Gly Pro Ala Pro Gly Ala Gly His Val Gln Glu Glu Ser
            35                  40                  45
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Asn Leu Ser Leu Gln Ala Leu Glu Ser Arg Gln Asp Asp Ile Leu Lys
    50                  55                  60
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```
Arg Leu Tyr Glu Leu Lys Ala Ala Val Asp Gly Leu Ser Lys Met Ile
65                  70                  75                  80
```

```
Gln Thr Pro Asp Ala Asp Leu Asp Val Thr Asn Ile Ile Gln Ala Asp
                85                  90                  95
```

```
Glu Pro Thr Thr Leu Thr Thr Asn Ala Leu Asp Leu Asn Ser Val Leu
            100                 105                 110
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```
Gly Lys Asp Tyr Gly Ala Leu Lys Asp Ile Val Ile Asn Ala Asn Pro
            115                 120                 125
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```
Ala Ser Pro Pro Leu Ser Leu Leu Val Leu His Arg Leu Leu Cys Glu
    130                 135                 140
```

```
His Phe Arg Val Leu Ser Thr Val His Thr His Ser Ser Val Lys Ser
145             150             155             160


Val Pro Glu Asn Leu Leu Lys Cys Phe Gly Glu Gln Asn Lys Lys Gln
                165             170             175


Pro Arg Gln Asp Tyr Gln Leu Gly Phe Thr Leu Ile Trp Lys Asn Val
            180             185             190


Pro Lys Thr Gln Met Lys Phe Ser Ile Gln Thr Met Cys Pro Ile Glu
            195             200             205


Gly Glu Gly Asn Ile Ala Arg Phe Leu Phe Ser Leu Phe Gly Gln Lys
    210             215             220


His Asn Ala Val Asn Ala Thr Leu Ile Asp Ser Trp Val Asp Ile Ala
225             230             235             240


Ile Phe Gln Leu Lys Glu Gly Ser Ser Lys Glu Lys Ala Ala Val Phe
            245             250             255


Arg Ser Met Asn Ser Ala Leu Gly Lys Ser Pro Trp Leu Ala Gly Asn
            260             265             270


Glu Leu Thr Val Ala Asp Val Val Leu Trp Ser Val Leu Gln Gln Ile
    275             280             285


Gly Gly Cys Ser Val Thr Val Pro Ala Asn Val Gln Arg Trp Met Arg
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                    Met Pro Met Tyr Gln Val Lys Pro Tyr His Gly
                     1               5                   10

ggc agc gca cct ctg cgt gta gag ctt cca acc tgc atg tac cgg ctc        158
Gly Ser Ala Pro Leu Arg Val Glu Leu Pro Thr Cys Met Tyr Arg Leu
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              15                   20                   25

ccc aac gtg cac agc aag acc acc agc ccc gcc acc gac gcg ggc cac        206
Pro Asn Val His Ser Lys Thr Thr Ser Pro Ala Thr Asp Ala Gly His
        30                   35                   40

gtg cag gaa aca tcc gag cct tct ttg caa gcc ctt gaa tct cgc caa        254
Val Gln Glu Thr Ser Glu Pro Ser Leu Gln Ala Leu Glu Ser Arg Gln
    45                   50                   55

gat gat att tta aaa cgc ttg tat gag ttg aag gca gca gtc gat ggc        302
Asp Asp Ile Leu Lys Arg Leu Tyr Glu Leu Lys Ala Ala Val Asp Gly
60                   65                   70                   75

ctt tca aag atg att cac acc cca gat gca gac ttg gac gta acc aac        350
Leu Ser Lys Met Ile His Thr Pro Asp Ala Asp Leu Asp Val Thr Asn
                80                   85                   90

atc ctg caa gct gat gag ccc aca act tta gcc aca aac aca ttg gac        398
Ile Leu Gln Ala Asp Glu Pro Thr Thr Leu Ala Thr Asn Thr Leu Asp
            95                   100                  105

ttg aat tcc gtg ctt gga aag gac tat ggg gcg ctg aaa gac att gtg        446
Leu Asn Ser Val Leu Gly Lys Asp Tyr Gly Ala Leu Lys Asp Ile Val
        110                  115                  120

atc aac gca aac cca gcc tcc cca cca ctg tcc ctg ctt gtg ctg cac        494
Ile Asn Ala Asn Pro Ala Ser Pro Pro Leu Ser Leu Leu Val Leu His
        125                  130                  135

agg ctg ctc tgt gaa cgc tac agg gtc ctg tcc act gtg cac aca cat        542
Arg Leu Leu Cys Glu Arg Tyr Arg Val Leu Ser Thr Val His Thr His
140                  145                  150                  155

tcg tct gtc aag aat gtg ccc gag aat ctt gtc aag tgc ttc ggg gag        590
Ser Ser Val Lys Asn Val Pro Glu Asn Leu Val Lys Cys Phe Gly Glu
                160                  165                  170

cag gct agg aag cag tcc cgc cac gag tat cag ctg ggc ttc act ctg        638
Gln Ala Arg Lys Gln Ser Arg His Glu Tyr Gln Leu Gly Phe Thr Leu
            175                  180                  185

att tgg aag aat gtg ccc aag aca cag atg aag ttc agt gta caa acc        686
Ile Trp Lys Asn Val Pro Lys Thr Gln Met Lys Phe Ser Val Gln Thr
        190                  195                  200

atg tgc ccc att gaa gga gaa ggg aac atc gca cgt ttc ctg ttc tct        734
Met Cys Pro Ile Glu Gly Glu Gly Asn Ile Ala Arg Phe Leu Phe Ser
        205                  210                  215

ctg ttt ggc cag aag cat aat gct gtc acc ctc acc ctc atc gat agc        782
Leu Phe Gly Gln Lys His Asn Ala Val Thr Leu Thr Leu Ile Asp Ser
220                  225                  230                  235

tgg gtg gat atc gcc atg ttt cag ctt cga gaa ggc agc agt aaa gaa        830
Trp Val Asp Ile Ala Met Phe Gln Leu Arg Glu Gly Ser Ser Lys Glu
                240                  245                  250

aaa gcg gcc gtg ttc cgc tct atg aac tcc gct ttg ggg agg agc ccg        878
Lys Ala Ala Val Phe Arg Ser Met Asn Ser Ala Leu Gly Arg Ser Pro
        255                  260                  265

tgg ctg gtt gga aat gag ctc act gtg gca gat gtg gtg ctg tgg tct        926
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Trp Leu Val Gly Asn Glu Leu Thr Val Ala Asp Val Val Leu Trp Ser
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Val Leu Gln Gln Thr Gly Gly Ser Ser Gly Ala Ala Pro Thr Asn Val
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cag cgg tgg ctt aag tcc tgt gaa aac ctg gcc ccc ttc agc act gcc    1022
Gln Arg Trp Leu Lys Ser Cys Glu Asn Leu Ala Pro Phe Ser Thr Ala
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ctt cag ctc ctt aag tga attcgagcag cttgtcttgc agggttcaac          1070
Leu Gln Leu Leu Lys
            320
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agaagaatgg tacggcttcc agtctgttgt cagaaaggga cttgtccaat aaagtaccat    1130
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            20              25              30
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Glu Pro Ser Leu Gln Ala Leu Glu Ser Arg Gln Asp Asp Ile Leu Lys
    50              55              60
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Arg Leu Tyr Glu Leu Lys Ala Ala Val Asp Gly Leu Ser Lys Met Ile
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```

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His Thr Pro Asp Ala Asp Leu Asp Val Thr Asn Ile Leu Gln Ala Asp
            85              90              95
```

```
Glu Pro Thr Thr Leu Ala Thr Asn Thr Leu Asp Leu Asn Ser Val Leu
            100             105             110
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Gly Lys Asp Tyr Gly Ala Leu Lys Asp Ile Val Ile Asn Ala Asn Pro
        115             120             125
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Ala Ser Pro Pro Leu Ser Leu Leu Val Leu His Arg Leu Leu Cys Glu
    130             135             140
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Arg Tyr Arg Val Leu Ser Thr Val His Thr His Ser Ser Val Lys Asn
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Val Pro Glu Asn Leu Val Lys Cys Phe Gly Glu Gln Ala Arg Lys Gln
                165             170             175


Ser Arg His Glu Tyr Gln Leu Gly Phe Thr Leu Ile Trp Lys Asn Val
            180             185             190


Pro Lys Thr Gln Met Lys Phe Ser Val Gln Thr Met Cys Pro Ile Glu
            195             200             205


Gly Glu Gly Asn Ile Ala Arg Phe Leu Phe Ser Leu Phe Gly Gln Lys
    210             215             220


His Asn Ala Val Thr Leu Thr Leu Ile Asp Ser Trp Val Asp Ile Ala
225             230             235             240


Met Phe Gln Leu Arg Glu Gly Ser Ser Lys Glu Lys Ala Ala Val Phe
                245             250             255


Arg Ser Met Asn Ser Ala Leu Gly Arg Ser Pro Trp Leu Val Gly Asn
                260             265             270


Glu Leu Thr Val Ala Asp Val Val Leu Trp Ser Val Leu Gln Gln Thr
            275             280             285


Gly Gly Ser Ser Gly Ala Ala Pro Thr Asn Val Gln Arg Trp Leu Lys
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Ser Cys Glu Asn Leu Ala Pro Phe Ser Thr Ala Leu Gln Leu Leu Lys
305             310             315             320


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            35              40              45
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Glu Pro Ser Leu Gln Ala Leu Glu Ser Arg Gln Asp Asp Ile Leu Lys
    50              55              60

Arg Leu Tyr Glu Leu Lys Ala Ala Val Asp Gly Leu Ser Lys Met Ile
65              70              75                  80

His Thr Pro Asp Ala Asp Leu Asp Val Thr Asn Ile Leu Gln Ala Asp
                85                  90                  95

Glu Pro Thr Thr Leu Ala Thr Asn Thr Leu Asp Leu Asn Ser Val Leu
            100             105             110

Gly Lys Asp Tyr Gly Ala Leu Lys Asp Ile Val Ile Asn Ala Asn Pro
        115             120             125

Ala Ser Pro Pro Leu Ser Leu Leu Val Leu His Arg Leu Leu Cys Glu
    130             135             140

Arg Tyr Arg Val Leu Ser Thr Val His Thr His Ser Ser Val Lys Asn
145             150             155             160

Val Pro Glu Asn Leu Val Lys Cys Phe Gly Glu Gln Ala Arg Lys Gln
            165             170             175

Ser Arg His Glu Tyr Gln Leu Gly Phe Thr Leu Ile Trp Lys Asn Val
        180             185             190

Pro Lys Thr Gln Met Lys Phe Ser Val Gln Thr Met Cys Pro Ile Glu
    195             200             205

Gly Glu Gly Asn Ile Ala Arg Phe Leu Phe Ser Leu Phe Gly Gln Lys
    210             215             220

His Asn Ala Val Thr Leu Thr Leu Ile Asp Ser Trp Val Asp Ile Ala
225             230             235             240

Met Phe Gln Leu Arg Glu Gly Ser Ser Lys Glu Lys Ala Ala Val Phe
            245             250             255

Arg Ser Met Asn Ser Ala Leu Gly Arg Ser Pro Trp Leu Val Gly Asn
            260             265             270

Glu Leu Thr Val Ala Asp Val Val Leu Trp Ser Val Leu Gln Gln Thr
        275             280             285

Gly Gly Ser Ser Gly Ala Ala Pro Thr Asn Val Gln Arg Trp Leu Lys
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                                            Met Ile Val Phe Val
                                            1               5

agg ttc aac tcc agc cat ggt ttc cca gtg gag gtc gat tct gac acc       164
Arg Phe Asn Ser Ser His Gly Phe Pro Val Glu Val Asp Ser Asp Thr
            10              15              20

agc atc ttc cag ctc aag gag gtg gtt gct aag cga cag ggg gtt ccg       212
Ser Ile Phe Gln Leu Lys Glu Val Val Ala Lys Arg Gln Gly Val Pro
        25              30              35

gct gac cag ttg cgt gtg att ttc gca ggg aag gag ctg agg aat gac       260
Ala Asp Gln Leu Arg Val Ile Phe Ala Gly Lys Glu Leu Arg Asn Asp
        40              45              50

tgg act gtg cag aat tgt gac ctg gat cag cag agc att gtt cac att       308
Trp Thr Val Gln Asn Cys Asp Leu Asp Gln Gln Ser Ile Val His Ile
    55              60              65

gtg cag aga ccg tgg aga aaa ggt caa gaa atg aat gca act gga ggc       356
Val Gln Arg Pro Trp Arg Lys Gly Gln Glu Met Asn Ala Thr Gly Gly
70              75              80              85

gac gac ccc aga aac gcg gcg gga ggc tgt gag cgg gag ccc cag agc       404
Asp Asp Pro Arg Asn Ala Ala Gly Gly Cys Glu Arg Glu Pro Gln Ser
            90              95              100

ttg act cgg gtg gac ctc agc agc tca gtc ctc cca gga gac tct gtg       452
Leu Thr Arg Val Asp Leu Ser Ser Ser Val Leu Pro Gly Asp Ser Val
        105             110             115

ggg ctg gct gtc att ctg cac act gac agc agg aag gac tca cca cca       500
Gly Leu Ala Val Ile Leu His Thr Asp Ser Arg Lys Asp Ser Pro Pro
        120             125             130

gct gga agt cca gca ggt aga tca atc tac aac agc ttt tat gtg tat       548
Ala Gly Ser Pro Ala Gly Arg Ser Ile Tyr Asn Ser Phe Tyr Val Tyr
135             140             145

tgc aaa ggc ccc tgt caa aga gtg cag ccg gga aaa ctc agg gta cag       596
Cys Lys Gly Pro Cys Gln Arg Val Gln Pro Gly Lys Leu Arg Val Gln
150             155             160             165
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tgc agc acc tgc agg cag gca acg ctc acc ttg acc cag ggt cca tct    644
Cys Ser Thr Cys Arg Gln Ala Thr Leu Thr Leu Thr Gln Gly Pro Ser
                170             175             180

tgc tgg gat gat gtt tta att cca aac cgg atg agt ggt gaa tgc caa    692
Cys Trp Asp Asp Val Leu Ile Pro Asn Arg Met Ser Gly Glu Cys Gln
            185             190             195

tcc cca cac tgc cct ggg act agt gca gaa ttt ttc ttt aaa tgt gga    740
Ser Pro His Cys Pro Gly Thr Ser Ala Glu Phe Phe Phe Lys Cys Gly
        200             205             210

gca cac ccc acc tct gac aag gaa aca cca gta gct ttg cac ctg atc    788
Ala His Pro Thr Ser Asp Lys Glu Thr Pro Val Ala Leu His Leu Ile
    215             220             225

gca aca aat agt cgg aac atc act tgc att acg tgc aca gac gtc agg    836
Ala Thr Asn Ser Arg Asn Ile Thr Cys Ile Thr Cys Thr Asp Val Arg
230             235             240             245

agc ccc gtc ctg gtt ttc cag tgc aac tcc cgc cac gtg att tgc tta    884
Ser Pro Val Leu Val Phe Gln Cys Asn Ser Arg His Val Ile Cys Leu
            250             255             260

gac tgt ttc cac tta tac tgt gtg aca aga ctc aat gat cgg cag ttt    932
Asp Cys Phe His Leu Tyr Cys Val Thr Arg Leu Asn Asp Arg Gln Phe
        265             270             275

gtt cac gac cct caa ctt ggc tac tcc ctg cct tgt gtg gct ggc tgt    980
Val His Asp Pro Gln Leu Gly Tyr Ser Leu Pro Cys Val Ala Gly Cys
    280             285             290

ccc aac tcc ttg att aaa gag ctc cat cac ttc agg att ctg gga gaa   1028
Pro Asn Ser Leu Ile Lys Glu Leu His His Phe Arg Ile Leu Gly Glu
    295             300             305

gag cag tac aac cgg tac cag cag tat ggt gca gag gag tgt gtc ctg   1076
Glu Gln Tyr Asn Arg Tyr Gln Gln Tyr Gly Ala Glu Glu Cys Val Leu
310             315             320             325

cag atg ggg ggc gtg tta tgc ccc cgc cct ggc tgt gga gcg ggg ctg   1124
Gln Met Gly Gly Val Leu Cys Pro Arg Pro Gly Cys Gly Ala Gly Leu
            330             335             340

ctg ccg gag cct gac cag agg aaa gtc acc tgc gaa ggg ggc aat ggc   1172
Leu Pro Glu Pro Asp Gln Arg Lys Val Thr Cys Glu Gly Gly Asn Gly
        345             350             355

ctg ggc tgt ggg ttt gcc ttc tgc cgg gaa tgt aaa gaa gcg tac cat   1220
Leu Gly Cys Gly Phe Ala Phe Cys Arg Glu Cys Lys Glu Ala Tyr His
        360             365             370

gaa ggg gag tgc agt gcc gta ttt gaa gcc tca gga aca act act cag   1268
Glu Gly Glu Cys Ser Ala Val Phe Glu Ala Ser Gly Thr Thr Thr Gln
    375             380             385

gcc tac aga gtc gat gaa aga gcc gcc gag cag gct cgt tgg gaa gca   1316
Ala Tyr Arg Val Asp Glu Arg Ala Ala Glu Gln Ala Arg Trp Glu Ala
390             395             400             405

gcc tcc aaa gaa acc atc aag aaa acc acc aag ccc tgt ccc cgc tgc   1364
Ala Ser Lys Glu Thr Ile Lys Lys Thr Thr Lys Pro Cys Pro Arg Cys
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Page 11

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cat gta cca gtg gaa aaa aat gga ggc tgc atg cac atg aag tgt ccg      1412
His Val Pro Val Glu Lys Asn Gly Gly Cys Met His Met Lys Cys Pro
             425                     430                   435

cag ccc cag tgc agg ctc gag tgg tgc tgg aac tgt ggc tgc gag tgg      1460
Gln Pro Gln Cys Arg Leu Glu Trp Cys Trp Asn Cys Gly Cys Glu Trp
         440                     445                   450

aac cgc gtc tgc atg ggg gac cac tgg ttc gac gtg tag ccagggcggc       1509
Asn Arg Val Cys Met Gly Asp His Trp Phe Asp Val
     455                     460                   465

cgggcgcccc atcgccacat cctggggggag catacccagt gtctaccttc attttctaat   1569

tctcttttca aacacacaca cacgcgcgcg cgcgcgcaca cacactcttc aagttttttt   1629

caaagtccaa ctacagccaa attgcagaag aaactcctgg atccctttca ctatgtccat    1689

gaaaaacagc agagtaaaat tacagaagaa gctcctgaat ccctttcagt ttgtccacac    1749

aagacagcag agccatctgc gacaccacca acaggcgttc tcagcctccg gatgacacaa    1809

ataccagagc acagattcaa gtgcaatcca tgtatctgta tgggtcattc tcacctgaat   1869

tcgagacagg cagaatcagt agctggagag agagttctca catttaatat cctgccttt     1929

accttcagta aacaccatga agatgccatt gacaaggtgt ttctctgtaa aatgaactgc    1989

agtgggttct ccaaactaga ttcatggctt taacagtaat gttcttattt aaattttcag    2049

aaagcatcta ttcccaaaga accccaggca atagtcaaaa acatttgttt atccttaaga    2109

attccatcta tataaatcgc attaatcgaa ataccaacta tgtgtaaatc aacttgtcac    2169

aaagtgagaa attatgaaag ttaatttgaa tgttgaatgt ttgaattaca gggaagaaat    2229

caagttaatg tactttcatt ccctttcatg atttgcaact ttagaaagaa attgtttttc    2289

tgaaagtatc accaaaaaat ctatagtttg attctgagta ttcattttgc aacttggaga    2349

ttttgctaat acatttggct ccactgtaaa tttaatagat aaagtgccta taaaggaaac    2409

acgtttagaa atgatttcaa aatgatattc aatcttaaca aaagtgaaca ttattaaatc    2469

agaatcttta aagaggagcc tttccagaac taccaaaatg aagacacgcc cgactctctc    2529

catcagaagg gtttatacccc ctttggcaca ccctctctgt ccaatctgca agtcccaggg   2589

agctctgcat accaggggtt ccccaggaga gaccttctct taggacagta aactcactag    2649

aatattcctt atgttgacat ggattggatt tcagttcaat caaactttca gctttttttt    2709

cagccattca caacacaatc aaaagattaa caacactgca tgcggcaaac cgcatgctct     2769

tacccacact acgcagaaga gaaagtacaa ccactatctt ttgttctacc tgtattgtct    2829

gacttctcag gaagatcgtg aacataactg agggcatgag tctcactagc acatggaggc    2889

ccttttggat ttagagactg taaattatta aatcggcaac agggcttctc tttttagatg    2949

tagcactgaa a                                                         2960
```

<210> 8
<211> 465
<212> PRT
<213> Homo sapiens

<400> 8

```
Met Ile Val Phe Val Arg Phe Asn Ser Ser His Gly Phe Pro Val Glu
1               5                   10                  15


Val Asp Ser Asp Thr Ser Ile Phe Gln Leu Lys Glu Val Val Ala Lys
            20                  25                  30


Arg Gln Gly Val Pro Ala Asp Gln Leu Arg Val Ile Phe Ala Gly Lys
        35                  40                  45


Glu Leu Arg Asn Asp Trp Thr Val Gln Asn Cys Asp Leu Asp Gln Gln
    50                  55                  60


Ser Ile Val His Ile Val Gln Arg Pro Trp Arg Lys Gly Gln Glu Met
65                  70                  75                  80


Asn Ala Thr Gly Gly Asp Asp Pro Arg Asn Ala Ala Gly Gly Cys Glu
                85                  90                  95


Arg Glu Pro Gln Ser Leu Thr Arg Val Asp Leu Ser Ser Ser Val Leu
            100                 105                 110


Pro Gly Asp Ser Val Gly Leu Ala Val Ile Leu His Thr Asp Ser Arg
            115                 120                 125


Lys Asp Ser Pro Pro Ala Gly Ser Pro Ala Gly Arg Ser Ile Tyr Asn
    130                 135                 140


Ser Phe Tyr Val Tyr Cys Lys Gly Pro Cys Gln Arg Val Gln Pro Gly
145                 150                 155                 160


Lys Leu Arg Val Gln Cys Ser Thr Cys Arg Gln Ala Thr Leu Thr Leu
                165                 170                 175


Thr Gln Gly Pro Ser Cys Trp Asp Asp Val Leu Ile Pro Asn Arg Met
            180                 185                 190


Ser Gly Glu Cys Gln Ser Pro His Cys Pro Gly Thr Ser Ala Glu Phe
            195                 200                 205


Phe Phe Lys Cys Gly Ala His Pro Thr Ser Asp Lys Glu Thr Pro Val
    210                 215                 220
```

```
Ala Leu His Leu Ile Ala Thr Asn Ser Arg Asn Ile Thr Cys Ile Thr
225             230             235             240

Cys Thr Asp Val Arg Ser Pro Val Leu Val Phe Gln Cys Asn Ser Arg
                245             250             255

His Val Ile Cys Leu Asp Cys Phe His Leu Tyr Cys Val Thr Arg Leu
            260             265             270

Asn Asp Arg Gln Phe Val His Asp Pro Gln Leu Gly Tyr Ser Leu Pro
            275             280             285

Cys Val Ala Gly Cys Pro Asn Ser Leu Ile Lys Glu Leu His His Phe
    290             295             300

Arg Ile Leu Gly Glu Glu Gln Tyr Asn Arg Tyr Gln Gln Tyr Gly Ala
305             310             315             320

Glu Glu Cys Val Leu Gln Met Gly Gly Val Leu Cys Pro Arg Pro Gly
                325             330             335

Cys Gly Ala Gly Leu Leu Pro Glu Pro Asp Gln Arg Lys Val Thr Cys
            340             345             350

Glu Gly Gly Asn Gly Leu Gly Cys Gly Phe Ala Phe Cys Arg Glu Cys
            355             360             365

Lys Glu Ala Tyr His Glu Gly Glu Cys Ser Ala Val Phe Glu Ala Ser
    370             375             380

Gly Thr Thr Thr Gln Ala Tyr Arg Val Asp Glu Arg Ala Ala Glu Gln
385             390             395             400

Ala Arg Trp Glu Ala Ala Ser Lys Glu Thr Ile Lys Lys Thr Thr Lys
                405             410             415

Pro Cys Pro Arg Cys His Val Pro Val Glu Lys Asn Gly Gly Cys Met
            420             425             430

His Met Lys Cys Pro Gln Pro Gln Cys Arg Leu Glu Trp Cys Trp Asn
            435             440             445

Cys Gly Cys Glu Trp Asn Arg Val Cys Met Gly Asp His Trp Phe Asp
    450             455             460

Val
```

```
<210>  9
<211>  465
<212>  PRT
<213>  Homo sapiens

<400>  9

Met Ile Val Phe Val Arg Phe Asn Ser Ser His Gly Phe Pro Val Glu
1               5                   10                  15


Val Asp Ser Asp Thr Ser Ile Phe Gln Leu Lys Glu Val Val Ala Lys
            20                  25                  30


Arg Gln Gly Val Pro Ala Asp Gln Leu Arg Val Ile Phe Ala Gly Lys
        35                  40                  45


Glu Leu Arg Asn Asp Trp Thr Val Gln Asn Cys Asp Leu Asp Gln Gln
    50                  55                  60


Ser Ile Val His Ile Val Gln Arg Pro Trp Arg Lys Gly Gln Glu Met
65                  70                  75                  80


Asn Ala Thr Gly Gly Asp Asp Pro Arg Asn Ala Ala Gly Gly Cys Glu
                85                  90                  95


Arg Glu Pro Gln Ser Leu Thr Arg Val Asp Leu Ser Ser Ser Val Leu
            100                 105                 110


Pro Gly Asp Ser Val Gly Leu Ala Val Ile Leu His Thr Asp Ser Arg
        115                 120                 125


Lys Asp Ser Pro Pro Ala Gly Ser Pro Ala Gly Arg Ser Ile Tyr Asn
    130                 135                 140


Ser Phe Tyr Val Tyr Cys Lys Gly Pro Cys Gln Arg Val Gln Pro Gly
145                 150                 155                 160


Lys Leu Arg Val Gln Cys Ser Thr Cys Arg Gln Ala Thr Leu Thr Leu
                165                 170                 175


Thr Gln Gly Pro Ser Cys Trp Asp Asp Val Leu Ile Pro Asn Arg Met
                180                 185                 190


Ser Gly Glu Cys Gln Ser Pro His Cys Pro Gly Thr Ser Ala Glu Phe
            195                 200                 205


Phe Phe Lys Cys Gly Ala His Pro Thr Ser Asp Lys Glu Thr Pro Val
```

```
            210                 215                 220

Ala Leu His Leu Ile Ala Thr Asn Ser Arg Asn Ile Thr Cys Ile Thr
225             230             235                 240

Cys Thr Asp Val Arg Ser Pro Val Leu Val Phe Gln Cys Asn Ser Arg
            245             250                 255

His Val Ile Cys Leu Asp Cys Phe His Leu Tyr Cys Val Thr Arg Leu
            260             265                 270

Asn Asp Arg Gln Phe Val His Asp Pro Gln Leu Gly Tyr Ser Leu Pro
        275             280                 285

Cys Val Ala Gly Cys Pro Asn Ser Leu Ile Lys Glu Leu His His Phe
    290             295                 300

Arg Ile Leu Gly Glu Glu Gln Tyr Asn Arg Tyr Gln Gln Tyr Gly Ala
305             310                 315                 320

Glu Glu Cys Val Leu Gln Met Gly Gly Val Leu Cys Pro Arg Pro Gly
            325             330                 335

Cys Gly Ala Gly Leu Leu Pro Glu Pro Asp Gln Arg Lys Val Thr Cys
            340             345                 350

Glu Gly Gly Asn Gly Leu Gly Cys Gly Phe Ala Phe Cys Arg Glu Cys
        355             360                 365

Lys Glu Ala Tyr His Glu Gly Glu Cys Ser Ala Val Phe Glu Ala Ser
    370             375                 380

Gly Thr Thr Thr Gln Ala Tyr Arg Val Asp Glu Arg Ala Ala Glu Gln
385             390             395                 400

Ala Arg Trp Glu Ala Ala Ser Lys Glu Thr Ile Lys Lys Thr Thr Lys
            405             410                 415

Pro Cys Pro Arg Cys His Val Pro Val Glu Lys Asn Gly Gly Cys Met
            420             425                 430

His Met Lys Cys Pro Gln Pro Gln Cys Arg Leu Glu Trp Cys Trp Asn
        435             440                 445

Cys Gly Cys Glu Trp Asn Arg Val Cys Met Gly Asp His Trp Phe Asp
    450             455                 460
```

Val
465


```
<210>   10
<211>   471
<212>   DNA
<213>   Homo sapiens


<220>
<221>   CDS
<222>   (1)..(471)

<400>   10
gga agt cca gca ggt aga tca atc tac aac agc ttt tat gtg tat tgc      48
Gly Ser Pro Ala Gly Arg Ser Ile Tyr Asn Ser Phe Tyr Val Tyr Cys
1               5                   10                  15

aaa ggc ccc tgt caa aga gtg cag ccg gga aaa ctc agg gta cag tgc      96
Lys Gly Pro Cys Gln Arg Val Gln Pro Gly Lys Leu Arg Val Gln Cys
                20                  25                  30

agc acc tgc agg cag gca acg ctc acc ttg acc cag ggt cca tct tgc     144
Ser Thr Cys Arg Gln Ala Thr Leu Thr Leu Thr Gln Gly Pro Ser Cys
            35                  40                  45

tgg gat gat gtt tta att cca aac cgg atg agt ggt gaa tgc caa tcc     192
Trp Asp Asp Val Leu Ile Pro Asn Arg Met Ser Gly Glu Cys Gln Ser
        50                  55                  60

cca cac tgc cct ggg act agt gca gaa ttt ttc ttt aaa tgt gga gca     240
Pro His Cys Pro Gly Thr Ser Ala Glu Phe Phe Phe Lys Cys Gly Ala
65                  70                  75                  80

cac ccc acc tct gac aag gaa aca tca gta gct ttg cac ctg atc gca     288
His Pro Thr Ser Asp Lys Glu Thr Ser Val Ala Leu His Leu Ile Ala
                85                  90                  95

aca aat agt cgg aac atc act tgc att acg tgc aca gac gtc agg agc     336
Thr Asn Ser Arg Asn Ile Thr Cys Ile Thr Cys Thr Asp Val Arg Ser
            100                 105                 110

ccc gtc ctg gtt ttc cag tgc aac tcc cgc cac gtg att tgc tta gac     384
Pro Val Leu Val Phe Gln Cys Asn Ser Arg His Val Ile Cys Leu Asp
        115                 120                 125

tgt ttc cac tta tac tgt gtg aca aga ctc aat gat cgg cag ttt gtt     432
Cys Phe His Leu Tyr Cys Val Thr Arg Leu Asn Asp Arg Gln Phe Val
        130                 135                 140

cac gac cct caa ctt ggc tac tcc ctg cct tgt gtg tag              471
His Asp Pro Gln Leu Gly Tyr Ser Leu Pro Cys Val
145                 150                 155


<210>   11
<211>   156
<212>   PRT
<213>   Homo sapiens

<400>   11
```

```
Gly Ser Pro Ala Gly Arg Ser Ile Tyr Asn Ser Phe Tyr Val Tyr Cys
1               5                   10                  15

Lys Gly Pro Cys Gln Arg Val Gln Pro Gly Lys Leu Arg Val Gln Cys
            20                  25                  30

Ser Thr Cys Arg Gln Ala Thr Leu Thr Leu Thr Gln Gly Pro Ser Cys
        35                  40                  45

Trp Asp Asp Val Leu Ile Pro Asn Arg Met Ser Gly Glu Cys Gln Ser
    50                  55                  60

Pro His Cys Pro Gly Thr Ser Ala Glu Phe Phe Phe Lys Cys Gly Ala
65                  70                  75                  80

His Pro Thr Ser Asp Lys Glu Thr Ser Val Ala Leu His Leu Ile Ala
            85                  90                  95

Thr Asn Ser Arg Asn Ile Thr Cys Ile Thr Cys Thr Asp Val Arg Ser
            100                 105                 110

Pro Val Leu Val Phe Gln Cys Asn Ser Arg His Val Ile Cys Leu Asp
        115                 120                 125

Cys Phe His Leu Tyr Cys Val Thr Arg Leu Asn Asp Arg Gln Phe Val
    130                 135                 140

His Asp Pro Gln Leu Gly Tyr Ser Leu Pro Cys Val
145                 150                 155
```

```
<210>  12
<211>  156
<212>  PRT
<213>  Homo sapiens

<400>  12
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```
Gly Ser Pro Ala Gly Arg Ser Ile Tyr Asn Ser Phe Tyr Val Tyr Cys
1               5                   10                  15

Lys Gly Pro Cys Gln Arg Val Gln Pro Gly Lys Leu Arg Val Gln Cys
            20                  25                  30

Ser Thr Cys Arg Gln Ala Thr Leu Thr Leu Thr Gln Gly Pro Ser Cys
        35                  40                  45

Trp Asp Asp Val Leu Ile Pro Asn Arg Met Ser Gly Glu Cys Gln Ser
    50                  55                  60
```

```
Pro His Cys Pro Gly Thr Ser Ala Glu Phe Phe Phe Lys Cys Gly Ala
65              70              75                  80


His Pro Thr Ser Asp Lys Glu Thr Ser Val Ala Leu His Leu Ile Ala
                85              90                  95


Thr Asn Ser Arg Asn Ile Thr Cys Ile Thr Cys Thr Asp Val Arg Ser
            100             105             110


Pro Val Leu Val Phe Gln Cys Asn Ser Arg His Val Ile Cys Leu Asp
        115             120             125


Cys Phe His Leu Tyr Cys Val Thr Arg Leu Asn Asp Arg Gln Phe Val
    130             135             140


His Asp Pro Gln Leu Gly Tyr Ser Leu Pro Cys Val
145             150             155
```

<210> 13
<211> 1470
<212> DNA
<213> Rattus norvegicus

<220>
<221> CDS
<222> (1)..(1470)

<400> 13

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atg ata gtg ttt gtc agg ttc aac tcc agc tat ggc ttc cca gtg gag        48
Met Ile Val Phe Val Arg Phe Asn Ser Ser Tyr Gly Phe Pro Val Glu
1               5                   10                  15

gtc gat tct gac acc agc atc ttc cag ctc aag gaa gtg gtt gct aag        96
Val Asp Ser Asp Thr Ser Ile Phe Gln Leu Lys Glu Val Val Ala Lys
                20                  25                  30

cga cag ggg gtt cca gct gac cag ctg cga gtg att ttt gct ggg aag       144
Arg Gln Gly Val Pro Ala Asp Gln Leu Arg Val Ile Phe Ala Gly Lys
            35                  40                  45

gag ctg cag aat cac ctg aca gta cag cat ccc cag gat ggt ttc tgt       192
Glu Leu Gln Asn His Leu Thr Val Gln His Pro Gln Asp Gly Phe Cys
        50                  55                  60

cat aag tct cac ctt gct gtt cat aat ctc tct cag cag gac gtc aca       240
His Lys Ser His Leu Ala Val His Asn Leu Ser Gln Gln Asp Val Thr
65                  70                  75                  80

cag aac tgt gac ctg gaa caa cag agt atc gtt cac ata gta cag aga       288
Gln Asn Cys Asp Leu Glu Gln Gln Ser Ile Val His Ile Val Gln Arg
                85                  90                  95

cca cag agg aaa agt cac gaa aca aat gcc tct gga ggg gac aaa ccc       336
Pro Gln Arg Lys Ser His Glu Thr Asn Ala Ser Gly Gly Asp Lys Pro
            100                 105                 110
```

```
cag agc acc ccg gag ggc tcc ata tgg gag ccc aga agc ttg act cga       384
Gln Ser Thr Pro Glu Gly Ser Ile Trp Glu Pro Arg Ser Leu Thr Arg
        115             120             125

gtg gac ctc agc agc cat atc ctg cca gcg gac tcc gtg ggg ctg gca       432
Val Asp Leu Ser Ser His Ile Leu Pro Ala Asp Ser Val Gly Leu Ala
130             135             140

gtc att ctg gac aca gac agc aag agt gac tca gaa gca gcc aga ggt       480
Val Ile Leu Asp Thr Asp Ser Lys Ser Asp Ser Glu Ala Ala Arg Gly
145             150             155             160

cca gaa gct aaa ccc acc tac cac agc ttt ttt gtc tac tgc aaa ggc       528
Pro Glu Ala Lys Pro Thr Tyr His Ser Phe Phe Val Tyr Cys Lys Gly
                165             170             175

ccc tgc cac aag gtc cag cct ggg aaa ctc cga gtt cag tgc ggc acc       576
Pro Cys His Lys Val Gln Pro Gly Lys Leu Arg Val Gln Cys Gly Thr
            180             185             190

tgc aga caa gca acc ctc acc ttg gcc cag ggc cca tct tgc tgg gat       624
Cys Arg Gln Ala Thr Leu Thr Leu Ala Gln Gly Pro Ser Cys Trp Asp
        195             200             205

gat gtc tta att cca aac cgg atg agt gga gag tgt caa tct cca gac       672
Asp Val Leu Ile Pro Asn Arg Met Ser Gly Glu Cys Gln Ser Pro Asp
        210             215             220

tgc cct ggg aca aga gct gaa ttt ttc ttt aaa tgt gga gca cac cca       720
Cys Pro Gly Thr Arg Ala Glu Phe Phe Phe Lys Cys Gly Ala His Pro
225             230             235             240

acc tca gac aag gac aca tca gta gct ttg aac ctg atc acc aac aac       768
Thr Ser Asp Lys Asp Thr Ser Val Ala Leu Asn Leu Ile Thr Asn Asn
            245             250             255

agc cgc agc atc ccc tgc atc gcg tgc acg gat gtc agg aac cct gtc       816
Ser Arg Ser Ile Pro Cys Ile Ala Cys Thr Asp Val Arg Asn Pro Val
        260             265             270

ttg gtc ttc caa tgt aac cac cgc cac gtg atc tgt ttg gac tgc ttc       864
Leu Val Phe Gln Cys Asn His Arg His Val Ile Cys Leu Asp Cys Phe
        275             280             285

cac ttg tac tgt gtc aca agg ctc aac gat cgg cag ttt gtc cac gac       912
His Leu Tyr Cys Val Thr Arg Leu Asn Asp Arg Gln Phe Val His Asp
    290             295             300

gct cag ctt ggc tac tcg ctg ccg tgt gtg gct ggc tgt ccc aac tcc       960
Ala Gln Leu Gly Tyr Ser Leu Pro Cys Val Ala Gly Cys Pro Asn Ser
305             310             315             320

ctg att aaa gag ctc cat cac ttc agg atc ctt gga gaa gag cag tac      1008
Leu Ile Lys Glu Leu His His Phe Arg Ile Leu Gly Glu Glu Gln Tyr
            325             330             335

aac agg tac cag cag tat ggt gcc gag gag tgc gtg ctg cag atg gga      1056
Asn Arg Tyr Gln Gln Tyr Gly Ala Glu Glu Cys Val Leu Gln Met Gly
        340             345             350

ggt gtg ctg tgc ccc cgt cct ggc tgc gga gct ggg ctg ctg cct gaa      1104
Gly Val Leu Cys Pro Arg Pro Gly Cys Gly Ala Gly Leu Leu Pro Glu
        355             360             365
```

```
cag ggc cag aag aaa gtc acc tgt gaa ggg ggc aac ggc ctg ggc tgt       1152
Gln Gly Gln Lys Lys Val Thr Cys Glu Gly Gly Asn Gly Leu Gly Cys
    370             375             380

ggg ttc gtt ttc tgc cgg gac tgc aag gaa gca tac cat gaa ggg gag       1200
Gly Phe Val Phe Cys Arg Asp Cys Lys Glu Ala Tyr His Glu Gly Glu
385             390             395             400

tgc gac tcg atg ttc gaa gcc tcg ggg gcg act tct cag gca tac cgg       1248
Cys Asp Ser Met Phe Glu Ala Ser Gly Ala Thr Ser Gln Ala Tyr Arg
                405             410             415

gtg gat caa aga gct gct gag caa gca cgg tgg gag gag gcc tcc aag       1296
Val Asp Gln Arg Ala Ala Glu Gln Ala Arg Trp Glu Glu Ala Ser Lys
            420             425             430

gaa acc atc aag aaa acc acc aag cct tgt cct cgc tgc aat gtg ccc       1344
Glu Thr Ile Lys Lys Thr Thr Lys Pro Cys Pro Arg Cys Asn Val Pro
            435             440             445

att gaa aag aat gga gga tgt atg cac atg aag tgt cct cag ccc cag       1392
Ile Glu Lys Asn Gly Gly Cys Met His Met Lys Cys Pro Gln Pro Gln
        450             455             460

tgc aag ctg gag tgg tgt tgg aac tgc ggc tgt gag tgg aac cga gcc       1440
Cys Lys Leu Glu Trp Cys Trp Asn Cys Gly Cys Glu Trp Asn Arg Ala
465             470             475             480

tgc atg ggt gat cac tgg ttt gac gtg tag                               1470
Cys Met Gly Asp His Trp Phe Asp Val
            485


<210>  14
<211>  489
<212>  PRT
<213>  Rattus norvegicus

<400>  14

Met Ile Val Phe Val Arg Phe Asn Ser Ser Tyr Gly Phe Pro Val Glu
1               5               10              15


Val Asp Ser Asp Thr Ser Ile Phe Gln Leu Lys Glu Val Val Ala Lys
            20              25              30


Arg Gln Gly Val Pro Ala Asp Gln Leu Arg Val Ile Phe Ala Gly Lys
        35              40              45


Glu Leu Gln Asn His Leu Thr Val Gln His Pro Gln Asp Gly Phe Cys
    50              55              60


His Lys Ser His Leu Ala Val His Asn Leu Ser Gln Gln Asp Val Thr
65              70              75              80


Gln Asn Cys Asp Leu Glu Gln Gln Ser Ile Val His Ile Val Gln Arg
                85              90              95
```

```
Pro Gln Arg Lys Ser His Glu Thr Asn Ala Ser Gly Gly Asp Lys Pro
            100                 105                 110

Gln Ser Thr Pro Glu Gly Ser Ile Trp Glu Pro Arg Ser Leu Thr Arg
        115                 120                 125

Val Asp Leu Ser Ser His Ile Leu Pro Ala Asp Ser Val Gly Leu Ala
    130                 135                 140

Val Ile Leu Asp Thr Asp Ser Lys Ser Asp Ser Glu Ala Ala Arg Gly
145                 150                 155                 160

Pro Glu Ala Lys Pro Thr Tyr His Ser Phe Phe Val Tyr Cys Lys Gly
            165                 170                 175

Pro Cys His Lys Val Gln Pro Gly Lys Leu Arg Val Gln Cys Gly Thr
            180                 185                 190

Cys Arg Gln Ala Thr Leu Thr Leu Ala Gln Gly Pro Ser Cys Trp Asp
        195                 200                 205

Asp Val Leu Ile Pro Asn Arg Met Ser Gly Glu Cys Gln Ser Pro Asp
    210                 215                 220

Cys Pro Gly Thr Arg Ala Glu Phe Phe Phe Lys Cys Gly Ala His Pro
225                 230                 235                 240

Thr Ser Asp Lys Asp Thr Ser Val Ala Leu Asn Leu Ile Thr Asn Asn
            245                 250                 255

Ser Arg Ser Ile Pro Cys Ile Ala Cys Thr Asp Val Arg Asn Pro Val
            260                 265                 270

Leu Val Phe Gln Cys Asn His Arg His Val Ile Cys Leu Asp Cys Phe
        275                 280                 285

His Leu Tyr Cys Val Thr Arg Leu Asn Asp Arg Gln Phe Val His Asp
    290                 295                 300

Ala Gln Leu Gly Tyr Ser Leu Pro Cys Val Ala Gly Cys Pro Asn Ser
305                 310                 315                 320

Leu Ile Lys Glu Leu His His Phe Arg Ile Leu Gly Glu Glu Gln Tyr
            325                 330                 335

Asn Arg Tyr Gln Gln Tyr Gly Ala Glu Glu Cys Val Leu Gln Met Gly
```

```
                  340                      345                      350

Gly Val Leu Cys Pro Arg Pro Gly Cys Gly Ala Gly Leu Leu Pro Glu
        355                 360                 365

Gln Gly Gln Lys Lys Val Thr Cys Glu Gly Gly Asn Gly Leu Gly Cys
    370                 375                 380

Gly Phe Val Phe Cys Arg Asp Cys Lys Glu Ala Tyr His Glu Gly Glu
385                 390                 395                 400

Cys Asp Ser Met Phe Glu Ala Ser Gly Ala Thr Ser Gln Ala Tyr Arg
            405                 410                 415

Val Asp Gln Arg Ala Ala Glu Gln Ala Arg Trp Glu Glu Ala Ser Lys
            420                 425                 430

Glu Thr Ile Lys Lys Thr Thr Lys Pro Cys Pro Arg Cys Asn Val Pro
        435                 440                 445

Ile Glu Lys Asn Gly Gly Cys Met His Met Lys Cys Pro Gln Pro Gln
    450                 455                 460

Cys Lys Leu Glu Trp Cys Trp Asn Cys Gly Cys Glu Trp Asn Arg Ala
465                 470                 475                 480

Cys Met Gly Asp His Trp Phe Asp Val
            485

<210>  15
<211>  489
<212>  PRT
<213>  Rattus norvegicus

<400>  15

Met Ile Val Phe Val Arg Phe Asn Ser Ser Tyr Gly Phe Pro Val Glu
1               5                   10                  15

Val Asp Ser Asp Thr Ser Ile Phe Gln Leu Lys Glu Val Val Ala Lys
            20                  25                  30

Arg Gln Gly Val Pro Ala Asp Gln Leu Arg Val Ile Phe Ala Gly Lys
        35                  40                  45

Glu Leu Gln Asn His Leu Thr Val Gln His Pro Gln Asp Gly Phe Cys
    50                  55                  60

His Lys Ser His Leu Ala Val His Asn Leu Ser Gln Gln Asp Val Thr
```

65   70   75   80

Gln Asn Cys Asp Leu Glu Gln Gln Ser Ile Val His Ile Val Gln Arg
                85   90   95

Pro Gln Arg Lys Ser His Glu Thr Asn Ala Ser Gly Gly Asp Lys Pro
                100   105   110

Gln Ser Thr Pro Glu Gly Ser Ile Trp Glu Pro Arg Ser Leu Thr Arg
            115   120   125

Val Asp Leu Ser Ser His Ile Leu Pro Ala Asp Ser Val Gly Leu Ala
    130   135   140

Val Ile Leu Asp Thr Asp Ser Lys Ser Asp Ser Glu Ala Ala Arg Gly
145   150   155   160

Pro Glu Ala Lys Pro Thr Tyr His Ser Phe Phe Val Tyr Cys Lys Gly
                165   170   175

Pro Cys His Lys Val Gln Pro Gly Lys Leu Arg Val Gln Cys Gly Thr
                180   185   190

Cys Arg Gln Ala Thr Leu Thr Leu Ala Gln Gly Pro Ser Cys Trp Asp
            195   200   205

Asp Val Leu Ile Pro Asn Arg Met Ser Gly Glu Cys Gln Ser Pro Asp
    210   215   220

Cys Pro Gly Thr Arg Ala Glu Phe Phe Phe Lys Cys Gly Ala His Pro
225   230   235   240

Thr Ser Asp Lys Asp Thr Ser Val Ala Leu Asn Leu Ile Thr Asn Asn
                245   250   255

Ser Arg Ser Ile Pro Cys Ile Ala Cys Thr Asp Val Arg Asn Pro Val
                260   265   270

Leu Val Phe Gln Cys Asn His Arg His Val Ile Cys Leu Asp Cys Phe
            275   280   285

His Leu Tyr Cys Val Thr Arg Leu Asn Asp Arg Gln Phe Val His Asp
    290   295   300

Ala Gln Leu Gly Tyr Ser Leu Pro Cys Val Ala Gly Cys Pro Asn Ser
305   310   315   320

```
Leu Ile Lys Glu Leu His His Phe Arg Ile Leu Gly Glu Glu Gln Tyr
              325             330             335
```

```
Asn Arg Tyr Gln Gln Tyr Gly Ala Glu Glu Cys Val Leu Gln Met Gly
            340             345             350
```

```
Gly Val Leu Cys Pro Arg Pro Gly Cys Gly Ala Gly Leu Leu Pro Glu
            355             360             365
```

```
Gln Gly Gln Lys Lys Val Thr Cys Glu Gly Gly Asn Gly Leu Gly Cys
        370             375             380
```

```
Gly Phe Val Phe Cys Arg Asp Cys Lys Glu Ala Tyr His Glu Gly Glu
385             390             395             400
```

```
Cys Asp Ser Met Phe Glu Ala Ser Gly Ala Thr Ser Gln Ala Tyr Arg
                405             410             415
```

```
Val Asp Gln Arg Ala Ala Glu Gln Ala Arg Trp Glu Glu Ala Ser Lys
            420             425             430
```

```
Glu Thr Ile Lys Lys Thr Thr Lys Pro Cys Pro Arg Cys Asn Val Pro
            435             440             445
```

```
Ile Glu Lys Asn Gly Gly Cys Met His Met Lys Cys Pro Gln Pro Gln
        450             455             460
```

```
Cys Lys Leu Glu Trp Cys Trp Asn Cys Gly Cys Glu Trp Asn Arg Ala
465             470             475             480
```

```
Cys Met Gly Asp His Trp Phe Asp Val
                485
```


```
<210>  16
<211>  27
<212>  DNA
<213>  Homo sapiens

<400>  16
ttaagaattc ggaagtccag caggtag                                        27


<210>  17
<211>  29
<212>  DNA
<213>  Homo sapiens

<400>  17
attaggatcc ctacacacaa ggcagggag                                      29


<210>  18
```

```
<211>   19
<212>   DNA
<213>   Homo sapiens

<400>   18
gcgtttggaa tcactacag                                                    19


<210>   19
<211>   16
<212>   DNA
<213>   Homo sapiens

<400>   19
atgccgatgt accagg                                                       16


<210>   20
<211>   19
<212>   DNA
<213>   Homo sapiens

<400>   20
gggattcact ttaatttgg                                                    19


<210>   21
<211>   18
<212>   DNA
<213>   Homo sapiens

<400>   21
aatgttccct tcgccttc                                                     18


<210>   22
<211>   17
<212>   DNA
<213>   Homo sapiens

<400>   22
ttaaaaagga gccaggt                                                      17
```